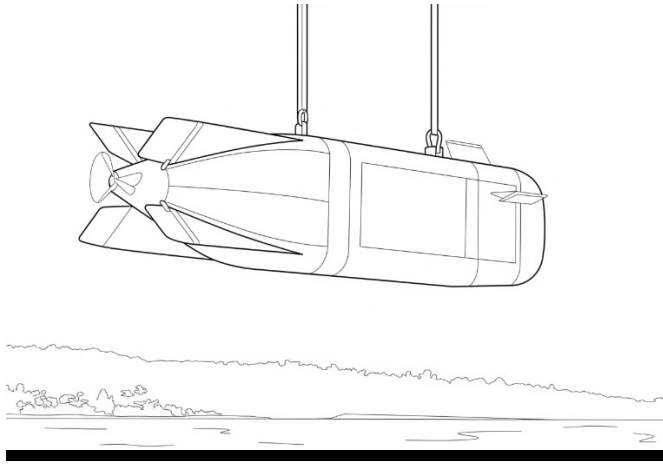
Anduril Industries — Dive-LD Autonomous Underwater Vehicle



[PHOTO: Anduril Dive-LD in water during UUVRON-1 training, Keyport WA, Dec 2024 — Source: U.S. DoD / DVIDS public domain]

[LINE DRAWING PLACEHOLDER — torpedo-form AUV profile with payload bay notation]

IDENTITY & DESIGNATION

Official Designation: Dive-LD (Large-Diameter Autonomous Undersea Vehicle / LD-AUV)

Manufacturer: Anduril Industries (Costa Mesa, California, USA)

Production Facility: Quonset Point, Rhode Island — 200+ hulls/year capacity from 2025/2026

Country of Origin: United States

Year Introduced: 2024 (UUVRON-1 training, December 2024); First delivery April 2025

Class: Large Displacement Unmanned Underwater Vehicle (LDUUV)

Programme Designation: Selected for DoD Replicator Initiative Tranche 2, August 2024

CLASSIFICATION

Domain: Subsurface (autonomous underwater vehicle)

Category: Military / Strategic — Autonomous Undersea ISR, MCM, ASW

Sub-Category: Large-diameter autonomous underwater vehicle — modular multi-mission

Mission: Undersea ISR; mine countermeasures; anti-submarine warfare support; seafloor mapping; communications relay; seabed warfare; infrastructure inspection

Operator: U.S. Navy — Unmanned Undersea Vehicle Squadron 1 (UUVRON-1); Defence Innovation Unit (DIU)

PHYSICAL SPECIFICATIONS

Weight: ~3 metric tons (3,000 kg)

Exterior Construction: 3D-printed exterior hull — enables rapid, cost-effective customisation and manufacturing at scale

Form Factor: Torpedo/cylinder body — large-diameter AUV class

Payload Architecture: Modular swappable payload bays — ISR sensors, MCM tools, environmental monitoring, comms relay packages

Architecture: Designed from ground up for production at scale — COTS components, modular design, advanced manufacturing techniques

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PROPULSION & PERFORMANCE

Propulsion: Electric — all-electric architecture for low acoustic signature and reduced maintenance burden

Max Depth: 6,000 metres

Endurance (Standard): 10 days autonomous mission — no surface support required

Endurance (Extended): Architecture scales for multi-week missions

Speed: [VERIFY] — not publicly disclosed

Range: [VERIFY] — not publicly disclosed for Dive-LD; Dive-XL variant: 2,000+ nautical miles

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GUIDANCE, NAVIGATION & CONTROL

Autonomy System: Anduril Lattice OS — AI-based autonomy platform fielded across Anduril's aerial and ground platforms; enables dynamic mission planning, adaptive navigation, onboard data processing

Navigation: High-reliability autonomous navigation; adaptive routing around obstacles and threats

Communications: Acoustic modems (underwater); satellite communications via pop-up buoy or surfacing; compatible with Link-16 via gateway nodes

Man-in-Loop: Autonomous between communications windows; commander retains mission authority via satellite/acoustic uplink

AI Integration: Onboard data processing via Lattice OS — reduces bandwidth requirements and enables autonomous decision-making between comms windows

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SENSORS & PAYLOADS

Sonar: Synthetic aperture sonar (SAS); side-scan sonar (SSS); passive and active acoustic sensors

Optional Sensors: EO/IR mast for periscope-depth operations

Mission Kits: Swappable payload bays: ISR sensors, MCM tools, environmental monitoring, comms relay, seabed mapping, ASW packages

Software: Anduril Lattice OS — same AI autonomy stack as Ghost Shark XL-AUV and Anduril aerial platforms

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COUNTERMEASURE VULNERABILITY PROFILE

Acoustic Signature: All-electric propulsion significantly reduces acoustic noise vs. diesel-electric or ICE AUVs — primary stealth advantage

RF/EW Vulnerability: Not applicable while submerged — no RF emissions; communicates via acoustic modem or surface pop-up

Physical Vulnerability: Expendable by design under Replicator doctrine — loss of vehicle does not endanger crew

ASW Detection Risk: Low-acoustic electric AUV presents challenging passive sonar target; active sonar exposure risk during operations

Recovery: Can surface for recovery or operate as expendable depending on mission profile

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COST & PROCUREMENT

Unit Cost: ~$2.5 million per unit (reported)

Initial Contract: $18.6 million — U.S. Navy/DIU Large Displacement UUV prototyping contract

Replicator Selection: Selected August 2024 for Replicator Tranche 2 — mass production for rapid fielding

Production Rate: 200+ hulls per year from Quonset Point, Rhode Island facility

Cost Comparison: $2.5M Dive-LD vs. $3–4 billion Virginia-class submarine — ratio 1,200:1; AUV delivers persistent undersea presence without crew risk

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OPERATIONAL HISTORY

Training: UUVRON-1 / UUVGRU-1 operational training, Keyport, Washington — December 11, 2024

First Delivery: April 5, 2025 — delivered to U.S. Navy Unmanned Undersea Vehicle Squadron 1 (UUVRON-1)

Allied Use: Dive-XL variant (Anduril Ghost Shark) operational with Royal Australian Navy under $140M contract — operates 'almost daily' in Australia and U.S. as of late 2025

Combat Deployment: [VERIFY] — operational details classified

CRUISE MISSILE CONVERGENCE NOTES

The Dive-LD is the undersea expression of the convergence thesis. A decade ago, persistent autonomous undersea ISR at 6,000m depth and 10-day endurance was exclusive to nuclear submarines at $3–4 billion per hull. Anduril delivers the same persistent presence for $2.5 million and no crew at risk.

The Replicator selection is the doctrinal signal: the U.S. military has formally committed to mass-producing autonomous undersea vehicles rather than building more crewed submarines. This is the underwater equivalent of choosing Shahed economics over Tomahawk economics — but in the defender's hands, not the attacker's.

The Lattice OS connection is analytically important: the same AI autonomy stack that guides Anduril's aerial platforms (Fury, Altius) now operates underwater. Platform-agnostic AI is the integration layer that the convergence thesis predicts — intelligence finding the cheapest vehicle it can ride on, whether that vehicle flies, drives, or dives.

> *ENGINEER'S NOTE: The 3D-printed exterior is not a cost-cutting compromise — it is a manufacturing strategy. The same additive manufacturing techniques that allow Ukraine to build plywood strike drones allow Anduril to build customised AUV hulls without retooling. The design philosophy is identical: accept lower unit perfection, gain manufacturing speed and*

> *cost. At 200 hulls per year from one facility, Anduril is not building submarines. It is building inventory.*

MANUFACTURING PHILOSOPHY

Anduril designed Dive-LD explicitly for production at scale from the outset — not as a prototype scaled up, but as a production article from day one. Heavy reliance on commercial off-the-shelf components with robust supply chains, modular internal architecture that enables rapid payload and mission configuration changes, and advanced manufacturing techniques including 3D-printed exteriors are all deliberate design choices for scalability, not concessions to budget pressure.

The Quonset Point, Rhode Island production facility (100,000–150,000 sq ft, opening 2025/2026) is co-located near Anduril's maritime engineering center in Quincy, Massachusetts — enabling rapid design iteration based on fleet feedback even during full-rate production. This is the same rapid-iteration philosophy that Ukraine's drone industry has proven works under combat conditions.

SOURCES & CROSS-REFERENCES

Manufacturer: https://www.anduril.com/dive-ld

DefenseScoop (Replicator): https://defensescoop.com/2024/08/14/replicator-tranche-anduril-dive-ld-autonomous-underwater-drones/

Army Recognition (delivery): https://www.armyrecognition.com — April 5, 2025

Production facility: https://www.fanaticalfuturist.com/2025/01/anduril-

ramps-autonomous-underwater-vehicle-production-in-the-usa/

Cross-Reference: See Volume 2: Anduril Dive-XL (Ghost Shark — XLUUV variant); Anduril Copperhead (smaller AUV); Anduril Seabed Sentry (fixed undersea sensor)

Volume 1 Cross-Reference: Chapter 5.3 (Maritime ISR — subsurface domain); Chapter 4 (Convergence Thesis); Chapter 14 (AI & Autonomy — Lattice OS)